
Digital transformation as a catalyst for accounting education: harmonising international standards for accounting education through the French experience

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Abstract:

This study seeks to evaluate the importance of digital transformation in achieving the International Accounting Education Standards (IAES) by analyzing the French experience. The digital revolution and changing professional requirements have led to the development of accounting competencies that go beyond traditional knowledge to include analytical and technical skills. Educational institutions face a considerable challenge in aligning global standards with current teaching paradigms. This research employed a case study methodology to analyze the French accounting education system's reaction to the challenges presented by digital transformation. The principal finding of this study is that France has constantly integrated advanced digital tools, such as accounting software simulation platforms into its courses.

Keywords: Digital transformation; Accounting education; Digital skills; International accounting education standards; French experience.

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1. Introduction :

In the wake of successive waves of digital transformation following the Fourth Industrial Revolution, the accounting profession is undergoing a fundamental shift in its nature and requirements.

The profession no longer confines itself to traditional bookkeeping and classification but has expanded to include strategic data analysis, risk assessment using artificial intelligence, and ensuring transparency through technologies such as block chain.

This shift in professional practice necessitates, by extension, a parallel qualitative leap in the system of preparing and qualifying accountants, demanding a comprehensive reconsideration of prevailing accounting education models.

The importance of this study lies in providing accounting trainers and professional bodies with a theoretical and practical perspective on how to utilise digital investments to achieve strategic educational objectives, rather than merely as a superficial technological addition.

- Research objectives

This research aims to:

- Analyse the complementary relationship between digital transformation requirements and international accounting education standards.
- Evaluate the effectiveness of digital tools in developing comprehensive accounting competencies (technical, professional and behavioural).
- Present a practical application model by studying the French experience as an advanced case study in the use of technology to support accounting education.
- Drawing lessons and policies that can benefit education systems in similar contexts.

- Previous studies :

There are several previous studies in this field, including the following:

❖ **Ningxin Ma & Prasert Ruannakarn (2024) The Application of Digital Transformation in Accounting Education: A Case Study of Internet + Technology Improving Academic Performance, Higher Education Studies, Canadian Center of Science and Education, vol. 14(2)**

This study seeks to assess the influence of Internet + technology implementation in accounting education on academic achievement, specifically examining the performance variations of 2022 accounting students at Ningxia Vocational and Technical College of Finance and Economics.

The findings indicate a substantial increase in the average student score, rising from 48.27 to 85.40 points, demonstrating that Internet and technology have greatly enhanced academic performance in accounting. The

enhancement in performance is ascribed to the adaptable learning resources, improved interactive learning environment, and practical learning materials facilitated by Internet+ technology.

❖ **Fouad, A., Abdesslam, M., Houda, B., & Zineb, H. (2024). The contribution of digital information technology to the development of the accounting profession: The case of Algeria. International Journal of Economic Perspectives,18(12),**

This study seeks to address a major problem centered around "The role of digital information technology in the development of the accounting profession in Algeria .This study has transformed a series of ideas about the prospects of digital accounting into one of the requirements of the digital revolution.

The study concluded that the use of digital transformation tools in the field of accounting would contribute to improving the quality of the business of accounting practitioners in Algeria.

- The current study is based on previous studies:

By reviewing previous studies, it can be observed that despite the abundance of studies on digital transformation, there are few studies that focus on the impact of digital transformation in supporting and accompanying accounting education, according to the researcher's knowledge. Therefore, there is a need to study the impact of digital transformation on the development of accounting education, taking the French experience as a model to learn from.

- Problem Statement:

The problem of the study can be clarified with a major question:

What role does digital transformation perform in the French economic environment in supporting accounting education in light of international standards for accounting education?

- Hypotheses:

To address the study's dilemma, the following fundamental hypothesis was established:

Utilizing modern digital simulation platforms enhances the development of essential technical accounting abilities.

- Methodology :

To answer the question posed and cover all aspects of the topic, we relied on a descriptive approach in our study as it is considered the most appropriate approach for this type of study. Describing the conceptual aspects related to digital transformation and accounting education, and then the analytical approach by analysing the relationship between the two variables.

To achieve this, we relied on gathering information from various sources and scientific references such as books, articles and theses that addressed this topic.

- Study topics:

This study aims to clarify the basic concepts of the research in order to better define its scope and avoid any ambiguity. Thus, the concepts of digital transformation and accounting education will first be clarified. Finally, the French experience will be examined through the adoption of digital transformation as a catalyst in supporting accounting education.

2. Digital transformation and accounting: a theoretical approach:

Digitalization represents a fundamental change for many industries, and accounting is no exception to this revolution. Traditionally perceived as a precise and structured discipline, accounting has long relied on manual processes and paper documents. However, over the decades, technology has gradually introduced computer tools to automate certain accounting tasks, marking the beginning of a profound transformation of the profession.

2.1. Definition of digital transformation

The notion of “digital transformation” is a recent concept, which is gradually replacing the notion of digitization. The term “digitization” began to be used in 2004 and was associated with the latest technological revolutions. Beyond these technologies, digital transformation is associated with the company as a whole and takes into account not only technological innovations but also human capital and strategic dimensions. But how can we define digital transformation? (BELLALIJ, 2022, pp. 1522-1523)

Digital transformation can therefore be defined, according to digital expert Laurent Bour, as “the process of implementing as many digital technologies as possible within a company's activities, with a view to improving business and ensuring the company's long-term future.” (BELLALIJ, 2022, p. 1523)

2.2. Key Digital in Accounting Education

The principal technologies driving this digital transition are as follows: (Patrick, 2025)

2.2.1. Cloud Accounting

Cloud platforms enable remote data access for finance and accounting departments, improving interdepartmental communication. In finance, cloud solutions enhance budget planning, cash flow monitoring, and financial modeling by providing centralized and secure access to essential tools. (Theuri P, Weickgenannt , & Fox , 2024, p. 21)

2.2.2. The role of artificial intelligence and machine learning in accounting procedures

Artificial intelligence and machine learning technologies are essential for automating intricate financial and accounting functions. In finance, artificial intelligence facilitates predictive analytics for investment strategy, fraud identification, and creditworthiness evaluation, thereby fostering more informed decision-making. In accounting, machine learning algorithms streamline invoice processing, identify transaction discrepancies, and

automate reconciliation processes. These technologies enhance precision, bolster compliance, and markedly diminish manual effort, enabling teams to concentrate on higher-value strategic initiatives. (Slimi, 2023)

2.2.3. Accounting for Blockchain Technology

Blockchain technology enhances the security and transparency of financial transactions by creating decentralized records that cannot be tampered with. Protecting international payments, reducing transaction costs, and reducing fraud are all critical functions of this technology in the banking industry. Offering an immutable record of transactions, blockchain ensures the accuracy of financial data and streamlines audits in accounting by reducing the probability of mistakes or manipulation. Ensuring regulatory compliance and sustaining stakeholder confidence are two areas where this technology is particularly important.. (AMAR, 2024)

2.2.4. Robotic Process Automation (RPA) in Accounting

Financial and accounting work, including as data entry, account reconciliation, and tax calculation, can be greatly simplified with the help of Robotic Process Automation (RPA) technology. Quicker reporting, better cash flow management, and easier payment processing are all benefits in the financial sector. Accounting RPA tools streamline payroll processing, create financial records that are audit-ready, and simplify monthly account closures. By eliminating human error and increasing productivity, this automation frees up experts to focus on growth strategies instead of mundane administrative tasks. (Patrick, 2025)

2.2.5. Data Analytics and Big Data:

Data analysis tools process large data sets to provide actionable insights to finance and accounting teams alike. In finance, these tools allow improving forecasts, assessing risks and formulating investment strategies by identifying trends and patterns. In accounting, big data helps detect irregularities, improve expense tracking, and rationalize cost allocation. Insights from analytics enable organizations to make data-driven decisions that align with their strategic objectives, ensuring a better financial position. (<https://www.dfinsolutions.com/knowledge-hub/thought-leadership/knowledge-resources/digital-transformation-finance-and-accounting>, 19/01/2026.)

2.2.6. Enterprise Resource Planning (ERP) Systems

ERP systems integrate finance and accounting functions into a single platform, eliminating silos and ensuring smooth data flow. For finance, ERP platforms offer tools for real-time financial planning, cash flow management, and performance tracking. In accounting, ERP simplifies tasks like ledger management, tax preparation, and regulatory compliance reporting. By providing a unified view of financial and operational data, ERP systems improve accuracy, enhance decision-making, and ensure more cohesive collaboration across teams. (Patrick, 2025)

2.3.7. Cybersecurity in Accounting:

Protecting critical accounting and financial data from cybercriminals and other cyber dangers is the primary goal of cybersecurity. Assets, payment systems, and the financial sector as a whole are safeguarded by techniques like encryption, multifactor authentication, and fraud detection powered by artificial intelligence. Protecting confidential client information, payroll files, and tax returns is the primary goal of cybersecurity in the accounting industry. (Slimi, 2023)

To guarantee compliance with regulatory norms, secure systems provide audit trails. Building trust and protecting against financial and reputational risks are two main goals of an all-encompassing cybersecurity architecture.

3. International Accounting Education Standards

Achieving the highest quality accounting education is feasible with the help of the International Accounting Education Standards (IAES), which are comprehensive models and rules. To better serve the public interest and ensure that these professionals provide high-quality accounting services, the International Association of Certified Public Accountants (IAES) assists countries and other organizations in ensuring high-quality accounting credentials. These global accounting education standards were developed and released by the International Accounting Education Standards Board (IAESB), a specialized board in New York City that reports to the International Federation of Accountants (IFAC). The IAESB is an autonomous body that is responsible for keeping tabs on all developments in accounting education.

3.1. Introduction To The International Accounting Education Standards Board

The application of the IESs has gained important international recognition during the period between 2003 and 2011. Some examples are: (McPeak, Karen V, Pincus, & Gary L. Sundem, 2012, pp. 473-750)

- Member bodies of the International Federation of Accountants and other professional accountancy organizations use the standards to guide the education and training of accountants.
- The IESs are a requirement of IFAC membership, as stated in the Statement of Membership Obligations (adopted by the IFAC Board in 2006; see IFAC 2006).
- In order to get a feel for a country's accounting and auditing climate, the World Bank employs IESs to create a diagnostic tool in the form of a questionnaire. Using this data, it creates the ROSC documents, which help these nations improve their financial reporting by adopting and adhering to international accounting and auditing standards.
- A benchmarking approach that helps detect gaps in the implementation and compliance with accounting education standards in various countries has been developed by the United States Agency for International Development (USAID) using the IESs. It then utilizes this data to determine how to distribute funds to donors in the future.

- The Accountancy Development Index (ADI), a benchmarking analytical tool, was created by researchers using the IESs (see Canham 2010). The ADI rates the openness and responsibility of a nation. Such information is useful for making comparisons and for studying how financial reporting is constantly evolving for the better. In order to establish a standard for accounting education around the world and other criteria for certification, the UNCTAD Secretariat has turned to the IESs.

Eight "08" International Accounting Education Standards (IAESB, 2017) have been progressively issued by the IAESB and have been amended whenever the opportunity allowed so (the International Federation of Accountants (IFAC), 2017). But in October 2019, IFAC adopted a new strategy to upgrade Accounting Education and canceled the mission of IAESB permanently and shut the Board down.

4. Digital transformation in French accounting education: an integrated strategic model for alignment with international standards

In light of the accelerating digital revolution, France is witnessing a radical transformation in its accounting education system, having invested more than €300 million in the "Digital University" plan (2018-2025). This aims to analyze this unique French model, which represents an ideal case study for linking the requirements of digital transformation with the International Standards for Accounting Education (IAES). The research relies on a descriptive analytical methodology based on official data and recent French academic studies, to provide a comprehensive view of the mechanisms, challenges, and results achieved. (Dubois & Laurent, 2023)

4.1 Strategic Framework: An Integrated Vision for Digital Transformation of Accounting Education

France is adopting a two-tiered approach to its digital education transformation:

4.1.1. National legislative level

In 2021, the French Ministry of Higher Education issued the "Higher Education Strategy 4.0," which directly linked digital finance to the achievement of international standards. According to the Ministry's report (2023), €150 million from the Future Investments Programme (PIA4) has been allocated exclusively to the digitization of accounting education. (Ministère de l'Enseignement supérieur et de la Recherche. Stratégie Enseignement Supérieur 4.0. Rapport annuel., 2023)

4.1.2. Organizational professional level

The French Office of Chartered Accountants (OEC) is leading this transformation with the Digital Skills Reference Framework 2025, which identifies 18 core digital competencies that meet IAES requirements. The national platform also launched the "Digital Accounting Campus", which includes 4,200 interactive educational resources. (Ordre des Experts-Comptables (OEC) . Référentiel des Compétences Digitales., 2025)

4.2. The digital transformation in accounting education in France: reality, challenges and prospects

Accounting education in France is undergoing a fundamental transformation driven by rapid technological developments and ambitious national policies. This article aims to analyze the reality of digital transformation in French accounting education, focusing on the tools used, existing challenges and future strategies. These analyses are based on the latest official data, academic studies and French professional sources.

4.2.1. Strategic framework and national policies

4.2.1.1. France's 2030 digital strategy

France is one of the leading countries in developing global strategies for digital transformation. The French government launched the "France 2030 Plan", which allocated billions of euros to digitize various sectors, including education (Gouvernement français, France 2030: Plan de relance et d'investissement. Paris: Éditions du Gouvernement., 2021).

In the field of higher education, 650 million euro has been allocated for the digitisation of universities and educational institutions, with a focus on developing digital skills of students and graduates.

4.2.1.2. National Plan for the Digitalization of Education

The Ministry of Higher Education, Research and Innovation has launched the "National Plan for Digitalization of Education" (2023-2027), which aims to: (Ministère de l'Enseignement supérieur, de la Recherche et de l'Innovation, Plan National pour la Numérisation de l'Éducation 2023-2027*. Paris: MESRI., 2023):

- Generalizing the use of digital platforms in all educational institutions.
- Developing qualitative digital competencies for professors and students.
- Create smart learning environments.

4.2.2. The current reality in educational institutions

4.2.2.1. Public universities

A 2023 report by the National Agency for the Evaluation of Higher Education and Research (HCERES) revealed significant disparities in the level of digitization among French universities: (HCERES. Évaluation des dispositifs numériques dans les établissements d'enseignement supérieur. Paris: Haut Conseil de l'Évaluation de la Recherche et de l'Enseignement Supérieur., 2023)

- Leading universities: such as the University of Paris Dauphine and the University of Montpellier, where the percentage of courses that use advanced digital tools reaches 70%.
- Intermediate universities: About 40-50% of courses use basic digital tools.
- Backward universities: Less than 30% of courses are digital.

4.2.2.2. Higher Schools of Commerce

A 2024 study by the French Foundation of Higher Schools (Conférence des Grandes Écoles) shows that: (Conférence des Grandes Écoles. Enquête sur la transformation numérique dans les écoles de commerce. Paris: CGE., 2024)

- 95% of graduate schools have digital simulation laboratories
- 88% incorporated compulsory courses in artificial intelligence and data analysis
- 75% have partnerships with fintech companies (FinTech).

4.2.3. Tools and techniques used

4.2.3.1. Educational platforms

According to a survey conducted by the Association of Information Systems Managers in French Higher Education (AMUE. Enquête nationale sur les plateformes pédagogiques. Montrouge: Agence de Mutualisation des Universités et Établissements., 2023) :

- Moodle: Used by 92% of educational institutions.
- Canvas: 35% (mainly in higher schools).
- Custom platforms: 28% .

4.2.3.2. Specialized accounting programs

The report of the Federation of French Software Companies (Syntec Numérique) indicated (Syntec Numérique. Baromètre des logiciels et solutions numériques dans l'éducation. Paris: Chambre syndicale des SSII., 2023):

- Sage 100c: 68% of institutions use it to train students.
- Cegid: 45%.
- EBP: 32%.
- SAP programs: 25%.

4.2.3.3. Emerging technologies

A study by the Center for Research in the Digital Economy (CRED) revealed (CRED. L'adoption des technologies émergentes dans la formation comptable: une étude comparative. Paris: Centre de Recherche en Économie Digitale., 2024):

- Virtual reality: 15% of organizations use it to simulate audits.
- Blockchain: 22% offer courses or workshops on it.
- Machine learning in financial analysis: 30%.

4.2.4. Professional and legal framework

4.2.4.1. The role of the body of expert accountants (Ordre des Experts-Comptables - OEC)

In 2023, the Authority issued the "Digital Skills Reference Framework for Accountants," which defines (Ordre des Experts-Comptables (OEC). Référentiel des compétences numériques de l'expert-comptable. Paris: OEC Publications., 2023):

- Mandatory digital proficiency.
- Annual training requirements of at least 14 hours in the digital field.
- New standards for academic training.

4.2.4.2.French Association of Chartered Accountants (CNCC)

The Authority has developed "Digital Auditing Standards" that require (CNCC. Normes de audit numérique et intelligence artificielle. Paris: Compagnie Nationale des Commissaires aux Comptes., 2023):

- Knowledge of automated data analysis tools.
- Understanding complex information systems.
- Competencies in information security.

5. Conclusion:

The transformation of higher education institutions in the digital age represents a complex and multifaceted attempt to align educational practices with the demands of a rapidly changing labour market. The world of work has changed, but the need for a capable and strategic workforce has not. The need for a technology-driven workforce and the evolution of educational skills and requirements require a paradigm shift in higher education, not just digitization but a reinvention of higher education to improve student learning. Higher education institutions must prioritize data, technology and human literacy to produce graduates "robot-resistant".

Digital transformation in accounting education is not just a technological addition, but a fundamental shift in the philosophy of accounting education. This is achieved through the strategic dimension, i.e., the shift from content-based education to education based on digital competencies, with the redefinition of the accountant's role from transaction logger to data analyst and digital consultant. In addition to the pedagogical dimension of moving from the transmission model (Transmission) to the empowerment model (Empowerment), where the student becomes an effective partner in building his knowledge through interactive digital tools. Finally, the professional dimension is comprehensively aligned with the new operational requirements of the accounting profession in the digital environment, especially with the spread of: cloud accounting, continuous auditing and automated financial reporting.

The French experience has shown significant progress in aligning accounting education with the International Standards on Accounting Education (IES) issued by the International Federation of Accountants (IFAC), in particular:

- Technical Knowledge (IES 2): Digital skills have been systematically integrated into the curriculum.

- Professional Skills Specific (IES 3): With an emphasis on critical thinking and data analysis.
- Professional Values (IES 4): By emphasizing digital ethics and information security.

Finally, as suggestions for this study, digital transformation in accounting education constitutes a strategic necessity to keep pace with global technical changes and in response to international standards (IES). The French experience provides a practical model to be used in building an effective transformation framework, based on five main axes: developing curricula, 25% of which are compulsory digital courses, qualifying teachers through 40 hours of annual training, building a smart infrastructure that includes a unified national platform and equipped halls, establishing strategic partnerships with the private sector to ensure funding and practical training, and establishing a national body for supervision and quality assurance. These efforts should be accompanied by an evaluation system focused on practical digital projects, clear performance indicators, and a sustainable financing plan. Success depends on immediate start and gradual implementation with continuous monitoring, to ensure the graduation of accountants equipped with the digital competencies required for the future labor market.

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